IN THE SPECIFICATION

Please amend the paragraph beginning at page 21, line 23, to page 22, line 16, as follows:

FIG. 4 shows the drum 2Y and developing device 40Y together with arrangements therearound. As shown, after the charger 30Y has uniformly charged the surface of the drum 2Y to a preselected positive or negative potential, the laser beam L scans the surface of the drum 2Y imagewise to thereby form a latent image. In the developing device 40Y, a sleeve 41Y in rotation conveys a developer to a nip or developing zone [[A]] <u>A1</u> where the sleeve 41Y faces the drum 2Y. As a result, toner included in the developer is deposited on the latent image present on the drum 2Y for thereby producing a corresponding toner image. The toner image thus formed on the drum 2Y is transferred to a sheet or recording medium at an image transfer position [[B]] <u>B1</u> where the drum 2Y and an image transfer roller 5Y face each other. The cleaning device 50Y, FIG. 3, removes toner left on the drum 2Y after the image transfer with a cleaning blade 51Y, FIG. 3. Subsequently, a quenching lamp, not shown, discharges the surfaces of the drum 2Y to thereby prepare it for the next image formation.

Please amend the paragraph beginning at page 23, lines 1-19, as follows:

A procedure in which the printer forms a full-color image will be briefly described hereinafter. As shown in FIG. 2, the drums 2Y through 2K are rotated at preselected peripheral speed. By the procedure stated earlier in relation to the developing device 40Y, a toner image of particular color is formed on each of the drums 2Y through 2K. When a sheet is fed from any one of the sheet cassettes 20, FIG. 2, in synchronism with the rotation of the drums 2Y through 2K, the toner images of different colors are sequentially transferred from the drums 2Y through 2K to the sheet one above the other by the image transfer rollers [[2Y]]

5Y through 5K respectively facing the drums 2Y through 2K, forming a full-color image on the sheet. The sheet, carrying the full-color image thereon, is separated from the drum 2K and then conveyed to the fixing unit 21 by a belt conveyor 61. After the full-color image has been fixed on the sheet by a pair of fixing rollers included in the fixing unit 21, the sheet is driven out of the printer body.

Please amend the paragraph beginning at page 24, line 22, to page 25, line 4, as follows:

As shown in FIG. 4, the sleeve or developer carrier [[41]] 41Y included in the developing device 40Y is partly exposed to the outside via an opening formed in a casing [[40e]] 40a. The developing device 40Y additionally includes a first and a second screw [[43]] 43Y and [[44]] 44Y, respectively, a doctor or metering member 45Y, and a toner content sensor (T sensor hereinafter) [[46]] 46Y. The doctor [[45]] 45Y has an edge facing the surface of the sleeve [[41]] 41Y via a preselected gap.

Please amend the paragraph at page 25, lines 5-21, as follows:

The casing 40a stores a developer made up of magnetic carrier grains and toner grains chargeable to negative polarity. The developer is conveyed by the first and second screws 43Y and 44Y while frictionally charged by agitation and is then deposited on the sleeve 41Y in the form of a magnet brush by a magnetic pole, which is disposed in the sleeve [[42Y]] 41Y. Subsequently, the developer is metered by the doctor 45Y and then conveyed to the developing zone A where the sleeve 41Y faces the drum 2Y. In the developing zone A, the developer, forming a magnet brush on the sleeve 41Y, is brought into contact with the surface of the drum 2Y. At this instant, the toner grains are deposited on the latent image present on

the drum 2Y by an electric field for development, which will be described later, producing a Y toner image on the drum 2Y. The developer thus released the toner grains is returned to the casing 40a by the sleeve [[42Y]] <u>41Y</u>.

Please amend the paragraph beginning at page 25, line 22, to page 26, line 15, as follows:

A partition 47Y, existing between the first and second screws 43Y and 44Y, divides the inside of the casing 40a into a first chamber or feeding section, which accommodate the sleeve [[42Y]] <u>41Y</u> and first screw 43Y, and a second chamber or feeding section accommodating the second screw 44Y. Drive means, not shown, causes the first screw to rotate 43Y and convey the developer from the front toward the rear of the first chamber, as seen in a direction perpendicular to the sheet surface of FIG. 4, while feeding it to the sleeve 41Y. The developer thus conveyed to the end portion of the first chamber is introduced into the second chamber via an opening, not shown, formed in the partition 47Y. In the second chamber, the second screw 44Y, driven by drive means not shown, conveys the developer fed from the first chamber in the opposite direction to the first screw 43Y. The developer so conveyed to the end portion of the second chamber is returned to the first chamber via an opening, not shown, also formed in the partition 47Y.

Please amend the paragraph at page 32, line 22, to page 33, line 5, as follows:

FIG. 6, showing the results of Experiment, lists inter-pole angles $\theta 1$, stationary layer angles θd and ratios $\theta d/\theta 1$ thereof in various conditions different in the angles $\theta 1$ and θd from each other. As shown, in conditions 1 through 5, the inter-pole angle [[1]] <u>$\theta 1$</u> was selected to be 45°. In conditions 6 through 10, while the flux densities of the poles were the same as in

the conditions 1 through 5, the inter-pole angle [[1]] $\underline{\theta 1}$ was selected to be 30° and the stationary layer angle [[d]] $\underline{\theta d}$ was varied.

Please amend the paragraph at page 33, lines 6-13, as follows:

Analysis based on the data of FIG. 6 showed that the smaller the ratio θd/θ1, the smaller the dynamic torque, and vice versa. This indicates that for a given inter-pole angle θ1, a positive correlation holds between the stationary layer angle θd and the dynamic torque. It follows that by reducing the stationary layer angle [[XB]] $\underline{\theta d}$, it is possible to reduce the dynamic torque and therefore the stress to act on the developer.

Please amend the paragraph beginning at page 37, line 13, to page 38, line 5, as follows:

Further, a nonmagnetic casing [[C]] $\underline{C1}$ covers the magnetic member 45t except for the portion of the magnetic member 45t adjoining the surface of the sleeve, i.e., covers the upper end portion of the magnetic member 45t remote from the sleeve surface. The height of the flowing layer XA, as measured in the radial direction of the sleeve, decreases toward the doctor gap little by little while the height of the stationary layer XB increases little by little, as observed in the section of the developer layer X. When the upper end portion of the magnetic member 45t is not covered with a nonmagnetic member, a leak flux is generated from the upper end portion and tends to hold a more than necessary amount of developer in the vicinity of the doctor 45. As a result, the stationary layer XB increases in size and obstructs torque reduction. Further, to efficiently use the magnetic doctor, the magnetic field should preferably concentrate on the edge of the doctor 45.

Please amend the paragraph at page 38, lines 6-9, as follows:

As shown in FIG. 11, the casing [[C]] C1, constituting a nonmagnetic member that covers the upper end portion of the magnetic member 45t, may be replaced with a member 45u in which the upper portion is buried, if desired.

Please amend the paragraph at page 43, lines 3-11, as follows:

The thickness of the stationary layer XB in the radial direction of the sleeve was varied in each of the conventional printer and illustrative embodiment in order to determine how the carrier charging ability CA varied in accordance with the number of sheets output. Experiment 2 differs from Experiment 1 in that the thickness of the stationary layer XB was varied by varying the clearance or distance between the sleeve and the casing [[C]] C1 of the developing device.

Please amend the paragraph beginning at page 43, line 12, to page 44, line 1, as follows:

FIGS. 12A and 12B each show a particular condition of the stationary layer XB dependent on the clearance between the sleeve [[2]] 41 and the casing [[C]] C1 (casing clearance hereinafter). As shown in FIG. 12A, when the casing [[C]] C1 is gently inclined relative to the surface of the sleeve [[2]] 41 upstream of the doctor 45 such that it leaves the above surface little by little over a substantial distance, the stationary layer XB is thin. By contrast, as shown in FIG. 12B, when the casing [[C]] C1 is sharply inclined relative to the surface of the sleeve [[2]] 41 such that it sharply leaves the above surface, the stationary layer XB is thick. In this manner, the casing clearance effects the thickness of the stationary layer

XB. It is therefore possible to adjust the thickness of the stationary layer XB by varying the casing clearance.

Please amend the paragraph beginning at page 67, line 10, to page 68, line 3, as follows:

FIG. 19 shows the condition of a two-component type developer being conveyed via a developing zone in accordance with the illustrative embodiment. FIG. 20 shows the condition of FIG. 19 in the developing zone, as seen from the drum 2 side. The sleeve 41 accommodates the magnet roller not shown, as stated earlier. Labeled [[C]] C2 and [[D]] D2 are respectively a developing zone and a zone where an apparent coating ratio is measured. The developing zone [[C]] C2 refers to a zone where a magnet brush, i.e., brush chains formed by carrier grains contact the drum 1 and cause, while varying in condition themselves, toner grains to move toward the drum 2. Carrier grains, moving toward a main pole for development, exist between nearby magnets, so that magnetic lines of force in the normal direction are small, but magnetic lines of force in the tangential direction are large because the nearby magnets are opposite in polarity to each other. Such carrier grains therefore form a thinner developer layer than carrier grains present on the magnets.

Please amend the paragraph beginning at page 68, line 14, to page 69, line 1, as follows:

When the developer is being passed through the developing zone [[C]] C2 in the form of a magnet brush, the behavior of the developer varies in accordance with the packing state of the developer in the zone [[C]] C2, gap for development and linear velocity ratio of the sleeve 41 to the drum 2. As for the behavior of the developer in the developing zone [[C]]

C2, the developer should ideally move at substantially the same speed around the sleeve 41 and around the drum 2, as seen in the direction of a section. In this condition, it is possible to implement high-quality images free from carrier deposition and the omission of halftone in the peripheral portion of a solid image.

Please amend the paragraph at page 69, lines 2-15, as follows:

On the other hand, if the density of the developer in the developing zone [[C]] C2 is higher than bulk density, then a difference in speed between the developer layer right above the sleeve 41 and the developer layer adjoining the drum 2 increases. More specifically, the speed of the developer layer adjoining the drum 2 is lower than the speed of the developer right above the sleeve 41. To solve this problem it is necessary that a sufficient, magnetic restraining force be exerted on the developer adjoining the drum 2 in the developing zone [[C]] C2. This can be effectively done if the developer layer is made thinner. A thinner developer layer, combined with a narrower gap for development, is desirable from the faithful reproduction standpoint as well.

Please amend the paragraph at page 69, lines 16-22, as follows:

In light of the above, the illustrative embodiment maintains the developer layer in an optimum condition before it enters the developing zone [[C]] C2 to thereby prevent an excessive frictional force from acting on toner grains in the zone [[C]] C2. This allows effective development to be effected in a zone where the magnet brush is dense and the electric field for development is uniform.

Please amend the paragraph beginning at page 69, line 23, to page 70, line 11, as follows:

The prerequisite with a DC development system is that the uniformity of the magnet brush in the developing zone [[C]] C2 be enhanced in order to form a uniform image with low granularity. However, this prerequisite cannot be met unless the magnet brush is uniform before entering the developing zone [[C]] C2. In FIG. 20, there are shown the measuring zone [[D]] D2, which precedes the developing zone [[C]] C2, and developing zone [[C]] C2, as seen from the drum 2 side. As shown, if the developer layer is not uniform in the measuring zone [[D]] D2, then it is not uniform in the developing zone [[C]] C2 either. This is presumably because the developer, particularly the carrier grains supporting the toner grains, cannot easily move in the axial direction of the sleeve.

Please amend the paragraph beginning at page 70, line 12, to page 71, line 17, as follows:

We observed the condition of the magnet brush present in the measuring zone [[D]] D2 preceding the developing zone [[C]] C2. For estimation, use was made of a test machine. The sleeve 41 and drum 2 had diameters of 30 mm and 90 mm, respectively. The drum 2 comprised a false photoconductive drum implemented by a transparent drum formed of acrylic resin. After rotating the sleeve 41 and transparent drum 2 at preselected linear velocity, we confirmed the condition of the developer layer before the developing zone through the transparent drum 2 with a stereoscopic microscope; a projected area was measured and therefore data were bidimensional. Although estimation itself can be made without using a transparent drum, an actual drum must be removed in the event of observation if used. The resulting vibration might obstruct accurate observation of the

condition of the magnet brush. The surface of the false drum was provided with the same coefficient of friction μ as the surface of the actual drum 2. The stereoscopic microscope used for estimation comprised SZ-STB1 (trade name) available from OLYMPUS OPTICAL CO., LTD. An image obtained was digitized by image processing software Image Hyper II so as to calculate an apparent coating ratio M (%) expressed as:

$$\cancel{M = \alpha A + \alpha \quad \ldots (1)}$$

$$\underline{M = \alpha A2 + \beta \quad \ldots (1)}$$

where α denotes a surface coating coefficient, [[A]] A2 denotes an amount of developer for a unit area (g/cm^2), and β denotes a virtual surface coating coefficient M0 corresponding to a case wherein the amount of the developer scooped up is 0 mg/cm^2.

Please amend the paragraph at page 74, lines 2-11, as follows:

Further, the virtual surface coating coefficient β, which is theoretically zero, is expected to pass the origin in the equation (1) also. The equation (1) holds in a range in which the amount of scoop-up [[A]] A2 has practical values. In practice, when the amount [[A]] A2 is 5 mg/cm^2 or below, which is a non-practical range, the apparent coating ratio M rapidly converges toward the origin. The coefficient β is the calculated value of the apparent coating ratio M when the amount of scoop-up is 0 mg/cm^2, which is derived from the equation (1) in the practical range.

Please replace the Abstract on page 101, line 1-18, with the following new Abstract: